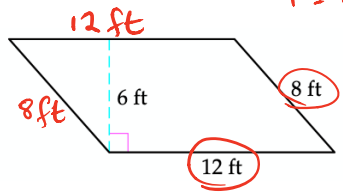
EXERCISE SET 7.3

■ In Exercises 2 to 8, find **(a)** the perimeter and **(b)** the area of the figure.

7.



$P = 12+8+12+8 = 40\text{ ft}$

$A = \frac{b_1+b_2}{2}h$

$= bh$

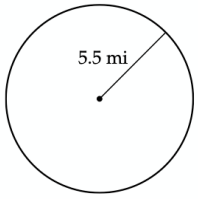
$= (12\text{ ft})(6\text{ ft})$

$= 72\text{ sq ft}$

■ In Exercises 9 to 14, find **(a)** the circumference and **(b)** the area of the figure. State an exact answer and a decimal approximation rounded to the nearest hundredth.

perimeter

11.



$C = 2\pi r = 2\pi\ 5.5\text{ mi}$

$= 11\pi\text{ mi}$

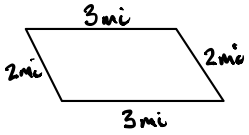
$= 34.56\text{ mi}$

$A = \pi r^2 = \pi(5.5\text{ mi})^2$

$= 30.25\pi\text{ sq mi}$

$= 95.03\text{ sq mi}$

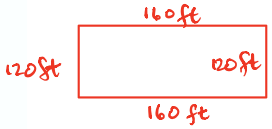
17. Cross-Country A cross-country course is in the shape of a parallelogram with a base of length 3 mi and a side of length 2 mi. What is the total length of the cross-country course?



P

$P = 3+2+3+2 = 10\text{ mi}$

18. Parks and Recreation A rectangular playground has a length of 160 ft and a width of 120 ft. Find the length of hedge that surrounds the playground.

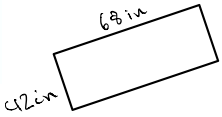


P

$P = 160+120+160+120$

$= 560\text{ ft}$

19. Sewing Bias binding is to be sewn around the edge of a rectangular tablecloth measuring 68 in. by 42 in. If the bias binding comes in packages containing 15 ft of binding, how many packages of bias binding are needed for the tablecloth?



P

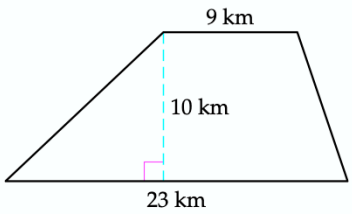
$P = 68+42+68+42 = 220\text{ in}$

$220\text{ in} \cdot \frac{1\text{ ft}}{12\text{ in}} = 18.\overline{3}\text{ ft}$

$18.333..\text{ ft} \cdot \frac{1\text{ package}}{15\text{ ft}} = 1.222...\text{ packages}$

buy 2 packages

33. Land Area A township is in the shape of a trapezoid with a height of 10 km and bases measuring 9 km and 23 km. What is the land area of the township?



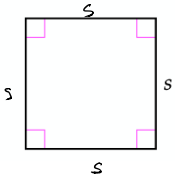
$A = \frac{b_1+b_2}{2}h$

$= \frac{9\text{ km}+23\text{ km}}{2}(10\text{ km}) =$

$= (16\text{ km})(10\text{ km}) = 160\text{ sq km}$

25. Framing The perimeter of a square picture frame is 36 in. Find the length of each side of the frame.

P=



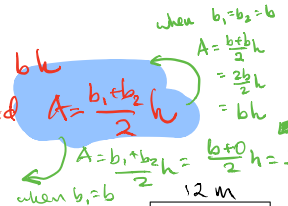
$P = s+s+s+s$

$36\text{in} = 4s$

$9\text{in} = s$ (Divide 4)

Note: Area of rectangle or parallelogram $A = bh$ is just special case of area of trapezoid $A = \frac{b_1+b_2}{2}h$

So is Area of triangle $A = \frac{1}{2}bh$



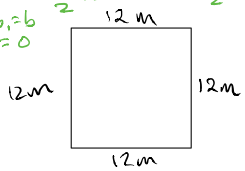
Area of rectangle or parallelogram

$A = (12\text{m})(12\text{m})$

$= 144$ sq m

$= 144\ m^2$

23. Construction What is the area of a square patio that measures 12 m on each side?



29. Storage Units You want to rent a storage unit. You estimate that you will need 175 ft^2 of floor space. You see the ad below on the Internet. You want to rent the smallest possible unit that will hold everything you want to store. Which of the six units pictured in the ad should you select?

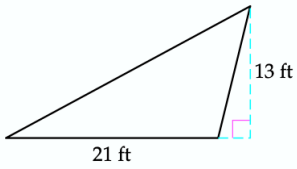
200 sqft

smallest number bigger than 175 sq ft

ANS

The 10×20 unit

31. Gardens A vegetable garden is in the shape of a triangle with a base of 21 ft and a height of 13 ft. Find the area of the vegetable garden.

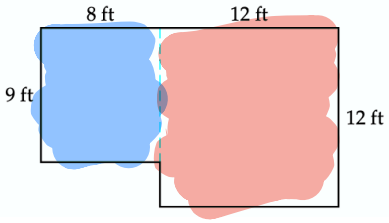


$A = \frac{1}{2}bh$

$= \frac{1}{2}(21\text{ ft})(13\text{ ft})$

$= 136.5$ sq ft

39. Carpeting You want to install wall-to-wall carpeting in the family room. The floor plan is shown below. If the cost of the carpet you would like to purchase is $38 per square yard, what is the cost of carpeting your family room? Assume that there is no waste. *Hint:* 9 ft^2 = 1 yd^2.



$A = (9\text{ ft})(6\text{ ft}) + (12\text{ ft})(12\text{ ft})$

$= 72$ sq ft $+ 144$ ft

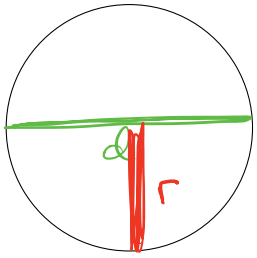
$= 216$ sq ft

$216\ ft^2 \cdot \frac{1\ yd^2}{9\ ft^2} \cdot \frac{38\ \$}{1\ yd^2}$

$= 912\ \$$

22. The length of a rectangle is equal to the diameter of a circle, and the width of the rectangle is equal to the radius of the same circle. Which is greater, the perimeter of the rectangle or the circumference of the circle?

$P = d + r + d + r$



$P = d + r + d + r = 2d + 2r$

$= 2(2r) + 2r$

$= 4r + 2r$

$= 6r$

$P = 2\pi r \approx 6.28r$

Circumference is bigger